

REMARKS

By this amendment, claim 2 is amended to place this application in condition for allowance. Currently, claims 1-15 are before the Examiner for consideration on their merits.

In the Office Action, the Examiner withdrew the previously-made rejections and made two new grounds of rejection. Therein, claims 1-15 stand rejected under 35 U.S.C. § 102(b) based on WO 01/16516 to Yamamoto et al. (Yamamoto) and claims 2-5, 9, 11-13, and 15 are rejected under 35 U.S.C. § 102(e) based on United States Patent No. 6,869,111 to Goto et al. (Goto).

The rejections are respectfully traversed and the arguments in favor of patentability are set forth below under the headings of the Invention, Arguments, and Summary.

INVENTION

At the moment, there are two independent claims before the Examiner for consideration on their merits. Claim 1 defines a threaded joint that has a lubricating coating on the contact surface of one of the pin or the box. This coating is further defined as a lower lubricant coating which is in liquid form in a particular temperature range, and an upper lubricant layer which is solid at 40 °C.

Claim 2 is also directed to a threaded joint that has a solid or semi-solid lubricating coating on the pin or box of the joint. The lubricating coating is further

defined as a mixture of an oil which is liquid in a certain temperature range and a wax which is solid at 40 °C.

WO 01/165516 to Yamamoto et al. (Yamamoto)

Claim 1

Since Yamamoto corresponds to United States Patent No. 6,679,526, it is the United States Patent that is referred to as part of Applicants' traversal. In the rejection, the Examiner takes the position that the rust preventing film or oil is the lower layer and the upper layer is the resin.

It is respectfully submitted that this interpretation is incorrect. The rust preventing film is the upper layer in Yamamoto. The Examiner is directed to Figure 10 of Yamamoto and its description in col. 19, lines 26-40, wherein the rust preventive film 12 is shown as an upper layer and the lubricating film 6 is the lower layer. While the Examiner cites col. 6, lines 23-42 and claim 5 to support the rejection, this passage and claim of Yamamoto do not support the rejection. Claim 5 defines the two embodiments of Figures 9 and 10, wherein the lubricating film is on one surface with the rust preventive film on another surface (Figure 9), or where the rust preventing film is atop the lubricating film (Figure 10). The column 6 disclosure merely teaches the use of the rust preventive film and describes its make up. There is no disclosure in this passage that supports the contention that the rust preventive film is a lower layer beneath the lubricating film.

Since Yamamoto does not teach the claimed upper and lower layers, the rejection of claim 1 based on Yamamoto is improper and must be withdrawn.

Also, the Examiner cannot somehow contend that the upper rust preventive layer of Yamamoto could be construed as a lower layer, since such a construction would not be a reasonable interpretation of the claims. Lower cannot be interpreted to mean upper or top as the rust preventive layer of Yamamoto is depicted.

Claim 2

In rejecting claim 2, the Examiner alleges that the lubricating coating of Yamamoto is the claimed solid or semi-solid coating at 40 °C that comprising the combination of a lubricating oil and a wax. The Examiner again references the column 6 passage which relates to the rust preventive film, claim 5, and col. 18, lines 10-56. Apparently, the Examiner is contending that the rust preventive oil with wax is the claimed lubricating coating.

To reiterate, claim 2 calls for a lubricating coating that is semi-solid or solid at 40 °C and this coating now is defined as consisting essentially of the claimed lubricating oil and a wax. Claim 2 also defines the lubricating oil and wax in terms of temperature to define the oil as a liquid between 0 and 40 °C and the wax as a solid at 40 °C so as to produce the lubricating coating in solid or semi-solid form at 40 °C. The purpose of this arrangement is to have the wax melt when the temperature of the lubricant coating layer increases due to the frictional heat generated during the connection of the pipe joints. Since the wax has a defined melting point, the wax is melted at a temperature above the melting point. After melting, the wax becomes a low viscosity liquid. Thus,

when melted wax is mixed with the lubricating oil, the resulting mixture can maintain a low level of viscosity.

It is contended that Yamamoto does not teach all of the features of claim 2. While Yamamoto does suggest that the rust preventive oil can have lubricants and wax, this disclosure alone does not teach the claimed lubricating coating in solid or semi-solid state at 40 °C or the mixture of the lubricating oil and wax as defined in claim 2. In fact, Yamamoto's invention is totally unrelated to the critical use of a wax in combination with a lubricating oil to achieve the effect recited above. Rather, Yamamoto's invention resides in the use of a solid lubricating film so that a compound grease does not have to be employed. At best, the rust preventive film is an addition to the lubricating film of Yamamoto; it is not a replacement for it. In fact, when considering claim 2 and the recitation of a lubricating coating, one of skill in the art would consider the solid lubricating coating of Yamamoto as the true lubricating coating, not the rust preventive layer. For the Examiner to read Yamamoto and characterize the rust preventive film as a lubricating coating is a misinterpretation of the teachings of Yamamoto. Therefore, the position that Yamamoto teaches the claimed lubricating coating is in error.

It is also contended that the mere fact that Yamamoto teaches a rust preventive oil that can have a wax does not serve as a basis to allege that the claimed solid or semi-solid lubricating coating as a mixture consisting essentially of the claimed oil and wax is disclosed. There is no suggestion in Yamamoto that the rust preventive layer be

a solid or semi-solid material and the failure of Yamamoto teach this aspect of claim 2 prevents reliance on 35 U.S.C. § 102(b).

In order to reject claim 2, the Examiner has to further modify Yamamoto so that the rust preventive film and wax are such that their mixture forms a semi-solid or solid state at 40 °C and that a wax being solid at 40 ° is used.

It is strenuously contended that there is no basis to further modify Yamamoto so as to arrive at the invention. One of skill in the art would not be motivated to modify the rust preventive film of Yamamoto to produce the properties of the lubricating coating of claim 2. As stated above, the rust preventive layer of Yamamoto is designed to work in concert with the lubricating coating, not in replacement thereof. One of skill in the art would not be motivated to alter the rust preventive layer of Yamamoto and try to make it function as a lubricating coating. The only way such a modification could be made would be through the hindsight reconstruction of the prior art in light of Applicant's disclosure. Since such a modification would be impermissible, any such rejection using Yamamoto could not be sustained on appeal.

In light of the above, the rejection of claims 1 and 2 based on Yamamoto must be withdrawn.

Even if an obviousness allegation were made, the coating of claim 2 brings with it unexpected improvements in the art of threaded joints. That is, the mixture layer gives an effect that it can act as a dry surface before use and a liquid lubricant during use, e.g., fastening or loosening. The Examiner's attention is directed to page 6, line 21+, wherein the claimed lubricating coating has a dry touch and thus does not absorb

or retain foreign matter. However, during the fastening or loosening, the wax melts as a result of the heat generated thereby, a lubricating coating is created, and good anti-galling properties are realized during this use.

The Examiner's attention is also directed to the comparative evidence set forth in the specification. In Table 5, it is shown that the coatings according to the invention of claim 2, Run Nos. 1-24, perform in a superior manner compared to the prior art coatings of Run Nos. 25 and 26. Run No. 25 uses the combination of Ca sulfonate and polypropylene with Run No. 26 using barium phenate and polystyrene. Run No. 25 had poor galling resistance, and Run No. 26 failed the greasiness test.

These results indicate that the combination of an oil and wax meeting the temperature requirements of claim 2 produce unexpected results, and these results rebut any contention that the invention is obvious based on the teachings of Yamamoto.

United States Patent No. 6,869,111 to Goto et al. (Goto)

In the rejection, the Examiner relies on Goto to reject independent claim 2. The Examiner contends that the lubricating coating of the liquid and wax is met by the fact that Goto discloses a basic lubricant as detailed beginning on col. 6, line 49, and the fact that a wax could be added as detailed in col. 9, lines 15-60.

It is respectfully submitted that the rejection is improper in light of the revision to claim 2. The coating mixture is now defined as "consisting essentially of" the liquid oil and wax. While the Examiner relies on the combination of the basic lubricant and wax of Goto

to reject the claims, the Examiner must also consider the fact that Goto and the invention are totally different in their method to lubricate a pipe joint. In Goto, it is primarily the lubricant, the resin, and other components that are mixed that provide the improvements in the coating performance. In the invention, an oil and wax are used to create a semi-solid or solid lubricating coating, whereby the increase in temperature generated during joint connection melts the wax and a low viscosity level mixture is maintained.

It is contended that Goto does not teach the invention of claim 2, as amended. In the examples of Goto, see Table 2, each lubricating composition includes a resin but there is no mention of the use of a wax. The presence of a resin alters the performance of the lubricating composition since it does not have a specific melting point. Rather, it softens gradually when the temperature of the composition rises. When a softened resin is mixed with a base oil, the viscosity of the resulting mixture markedly increases. As a result of the increase in viscosity, the friction is increased markedly as well. It is submitted that Goto does not teach a mixture that consists essentially of a lubricating oil and wax as defined in claim 2 as a lubricating coating, and the rejection based on 35 U.S.C. § 102(e) must be withdrawn. In other word, the resin of Goto materially changes the properties of the claimed composition, and the resin-containing composition of Goto cannot serve as a basis to anticipate claim 2, as amended.

Thus, the Examiner is left with rejecting claim 2 under 35 U.S.C. § 103(a). A rejection of this nature would be flawed for two reasons. It is contended that Goto does not establish a *prima facie* case of obviousness for the reason that there is no motivation to modify Goto so as to arrive at the lubricating composition of claim 2. Put another way,

Goto does not provide the motivation to select just a mixture consisting essentially of a lubricating oil and wax as set forth in claim 2. In Goto, the basic lubricant can be combined with a resin, a pressure agent, and other lubricants as detailed in col. 9. The exemplified compositions of Goto in Table 2 do not teach the use of a wax. Instead, they all include the presence of a resin in each composition. The comparative examples are of no help in formulating a rejection under 103 since they are directed to compound greases or a resin coating.

While a wax is suggested in Goto, there is no suggestion to use a lubricating composition that consists essentially of an oil and wax as presently claimed, and Goto does not provide a basis to allege that claim 2 is obvious. For the Examiner to conclude that one of skill in the art would be taught to formulate a lubricating composition that consists essentially of the claimed lubricating oil and wax is the application of hindsight on the part of the Examiner. There is but one mention of wax in Goto, and no teaching or suggestion as to the benefits of using a wax as claimed in combination with a lubricating oil as claimed.

The Examiner could make an allegation that Goto establishes a *prima facie* case of obviousness against claim 2 based on the suggestion that the oil and wax could be combined and that the resin is only a preferred component of the composition. However, the comparative evidence in the specification demonstrates unexpected results when the combination of the oil and wax as claimed is utilized in a coating application.

Again, the Examiner's attention is directed to the comparison set forth in the specification. In Table 5, it is shown that the coatings according to the invention of

claim 2, Run Nos. 1-24, perform in a superior manner compared to the prior art coatings of Run Nos. 25 and 26. Run No. 25 uses the combination of Ca sulfonate and polypropylene with Run No. 26 using Ba phenate and polystyrene. Run No. 25 had poor galling resistance, and Run No. 26 failed the greasiness test. Moreover, Run Nos. 25 and 26 are representative of the resin and oil lubricating compositions of Goto and, therefore, the comparison in the specification is directed to the closest prior art.

These results indicate that the combination of an oil and wax meeting the temperature requirements of claim 2 produce unexpected results, and these results rebut any contention that the invention is obvious based on the teachings of Goto. Thus, the rejection of claim 2 based on Goto under 35 U.S.C. § 102(e) should be withdrawn in favor of its allowance.

Summary

It is respectfully contended that the Examiner has failed to establish a *prima facie* case of anticipation against either of claims 1 or 2. That is, Yamamoto just does not teach the layered arrangement of claim 1, and there is no basis to conclude that somehow Yamamoto obviates this claim.

Regarding claim 2, Yamamoto also fails to teach the claimed mixture, and even if the Examiner were to allege that Yamamoto established a *prima facie* case of obviousness, the comparison in the specification effectively rebuts such a contention. The same reasoning above for Yamamoto and claim 2 applies to the rejection of claim 2

based on Goto. The dependent claims are also in condition for allowance by reason of their respective dependency on claims 1 and 2.

Accordingly, the Examiner is respectfully requested to examine this application in light of this Amendment, and pass claims 1-15 onto issuance.

While this Amendment is being presented after a final rejection, it is contended that the revision to claim 2 does not require any further search or consideration. Thus, this Amendment should be entered and the application passed onto issuance.

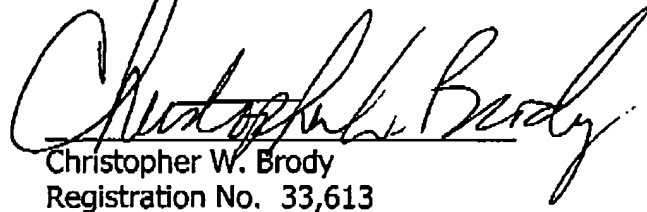
If the Examiner believes that an interview would expedite the prosecution of this application, the Examiner is requested to contact the undersigned at 202-835-1753.

The above constitutes a complete response to all issues raised in the Office Action dated January 25, 2006.

Again, reconsideration and allowance of this application is respectfully requested.

Applicants respectfully submit that there is no fee required for this submission, however, please charge any fee deficiency or credit any overpayment to Deposit Account No. 50-1088.

Respectfully submitted,
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